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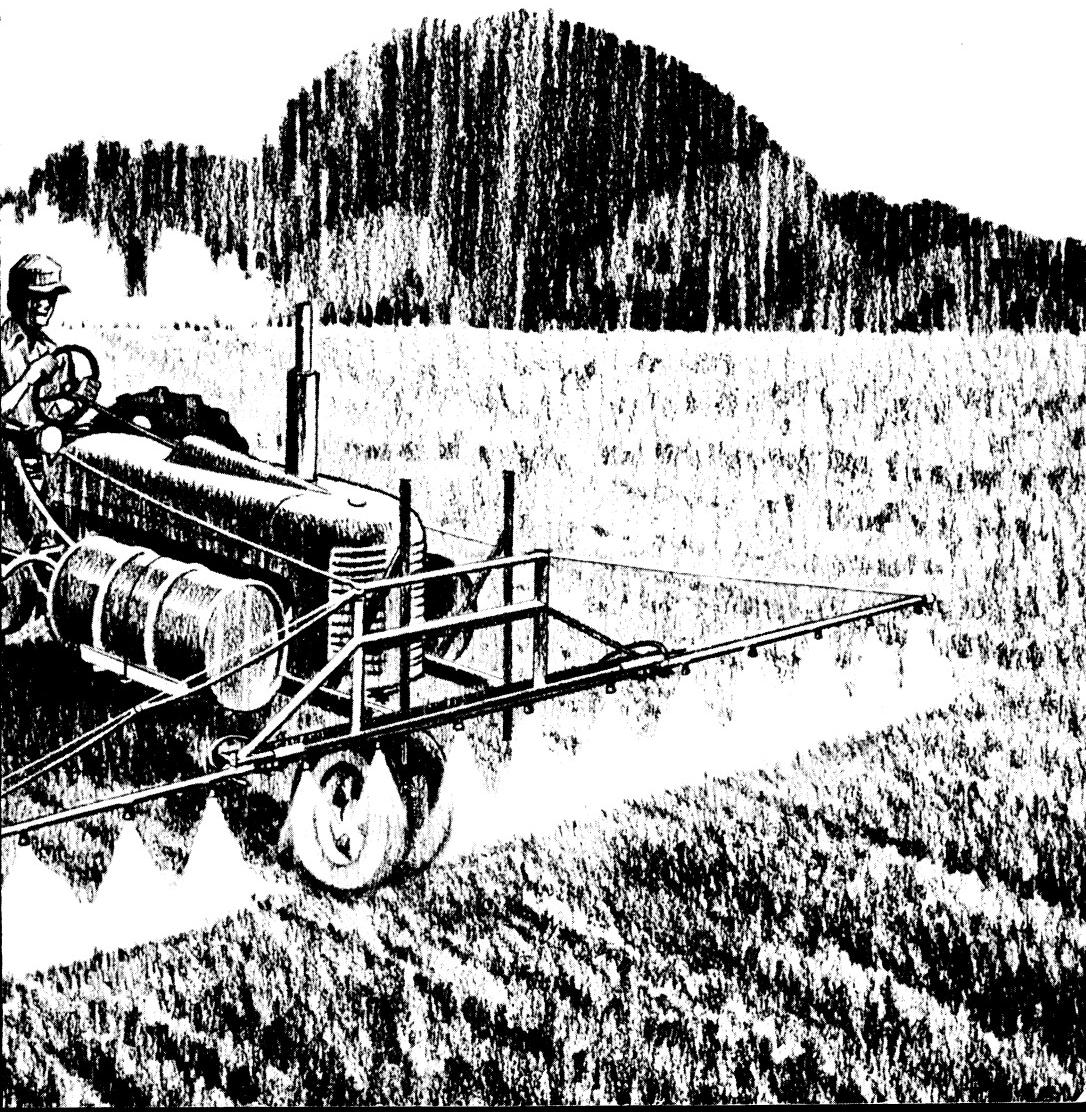
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USING PHENOXY HERBICIDES EFFECTIVELY



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The Federal registration for the use of 2,4,5-T around the home, near lakes, ponds, on ditchbanks and on food crops has been canceled. The inclusion of 2,4,5-T or any other herbicide in this publication does not suggest uses other than those covered by Federal registrations.

This bulletin supersedes Farmers' Bulletin 2005, "Using 2,4-D Safely."

Washington, D.C.

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USING PHENOXY HERBICIDES EFFECTIVELY

2,4-D, 2,4,5-T, MCPA, Silvex, 2,4-DB

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Phenoxy herbicides—chiefly 2,4-D, 2,4,5-T,¹ silvex, MCPA, and 2,4-DB—are used widely. They are used for controlling weeds in many crops, on grazing lands, on lawns, and for killing unwanted brush and trees. These herbicides are registered for use and are especially useful because—

- They are selective; they kill most broadleaf plants but do not kill grasses or grain crops.
- They are potent; many species of weeds are controlled by less than 1 pound of active ingredient per acre.
- They are easy to use.
- They are not poisonous to man, domestic animals, or game when applied at the recommended rates.
- They do not accumulate in the soil and they have no harmful effects on soil organisms.
- They are not corrosive to spraying equipment.

HOW PLANTS REACT

When sprayed with phenoxy herbicides, leaves, green stems, twigs, flowers, and fruits usually

absorb the herbicides. Roots absorb the herbicides sprayed on the soil. When they are applied to growing plants or to the soil, phenoxy herbicides rapidly become distributed in the leaves, stems, and roots and cause susceptible plants to die.

These herbicides are absorbed most readily by plants that are growing rapidly. Annual weeds are easiest to kill when they are young. Perennial weeds are easy to kill while they are seedlings; after they are established, most perennials are easiest to kill at the time flower buds appear.

Some broadleaf weeds are killed by very small amounts of phenoxy herbicides. Some are almost unaffected by very large amounts.

The charts on pages 11 to 24 lists the susceptibility of many common weeds and woody plants to control by 2,4-D, 2,4,5-T,¹ MCPA, silvex, and 2,4-DB.

SALTS AND ESTERS

Phenoxy herbicides are usually formulated as acids, salts, and esters. Salt and ester formulations usually are supplied as liquid concentrates. The purchaser dilutes them before use. The salt con-

¹ See limitation on use of 2,4,5-T on inside cover.

centrates form solutions when mixed with water. The ester concentrates form solutions when mixed with oil; they form milky-white emulsions when mixed with water.

Vapors from ester formulations can kill susceptible plants growing near the area to which the formulations are applied. Heat causes ester formulations to release vapors. Low-volatile esters vaporize at much slower rates than high-volatile esters. At temperatures below 90° F. there is significant hazard from vapors of high-volatile esters but only slight hazard from low-volatile ones. At high temperatures above 90° F. vapors from low-volatile esters are also a hazard to susceptible plants growing nearby. Nevertheless, the low-volatile esters main-

tain a relative margin of safety at higher temperatures. They are less likely to harm susceptible crops.

Salt formulations are safest. Generally, they do not release enough vapors to cause damage. Most of them are less expensive than esters.

High-volatile esters are usually less expensive than low-volatile esters and they can be used effectively and with moderate safety only if no susceptible crops are growing in the vicinity.

Ester formulations of the phenoxy herbicides are generally more potent, pound for pound, than salts. They penetrate leaves and other plant surfaces more readily than salts. When a range of rates is recommended for herbicide application, use the lower



Weeds in this field of small grain (treated part at right) were controlled with 2,4-D.
The herbicide costs less than 50 cents per acre.

BN-13721-X

rate for esters and the higher rate for salts.

Esters are more effective than salts for killing weeds that are growing slowly because of drought or cold weather. Esters usually are best for treating weeds in areas of low humidity; esters are formulated in oils and remain in moist contact on foliage longer and penetrate better than salts, which are mixed with water. And, because they are oily, esters are less likely than salts to be washed off foliage if rain falls soon after their application.

"ACID EQUIVALENT"

Phenoxy herbicide concentrates are available in various strengths. The amount of active ingredient in the concentrate is indicated on the container label as the number of pounds of "acid equivalent" in each gallon of concentrate.

Usually the strongest concentrates are the most economical to use; they usually cost less per pound of acid equivalent than weaker concentrates. For example, 1 gallon of a 2,4-D concentrate containing 4 pounds of acid equivalent per gallon usually will cost less than 4 gallons of concentrate containing 1 pound of acid equivalent per gallon, and it contains the same amount of active ingredient.

APPLICATION General Principles

If phenoxy herbicides are applied carefully they can save you

money and labor. If they are applied carelessly, they can kill your crops.

Some crops and ornamental plants are extremely sensitive to phenoxy herbicides; they are severely injured or killed by small traces of the herbicides, such as spray drift or vapors.

The most sensitive of the crops and ornamental plants include cotton, grapes, tomatoes, cucumbers, tobacco, mimosa, roses, and dogwood. For more information about sensitivity of your crops to phenoxy herbicides, ask your county agricultural agent.

When using phenoxy herbicides near sensitive plants, observe all precautions regarding vapors, spray drift, and cleanliness of equipment.

Types of Phenoxy Herbicides Commonly Available

SALTS, such as:

Amine (triethanolamine, diethanolamine, trimethylamine, diethylamine, dimethylamine and isopropanolamine).

Sodium

Potassium

Ammonium

ESTERS

High-Volatile, such as:

Ethyl

Isopropyl

Butyl

Amyl

Low-Volatile, such as:

Butoxyethanol

Butoxyethoxypropanol

Ethoxyethoxypropanol

Isooctyl

Propylene glycol butyl ether

For safe and effective control of weeds—

- Get professional advice before applying herbicides; ask your county agricultural agent, your State extension weed specialist, or other local agricultural authorities for weed-control recommendations.

- Use herbicides wisely: Follow label precautions. Do not apply herbicides for any use for which they are not registered.

- Avoid spraying on windy days.

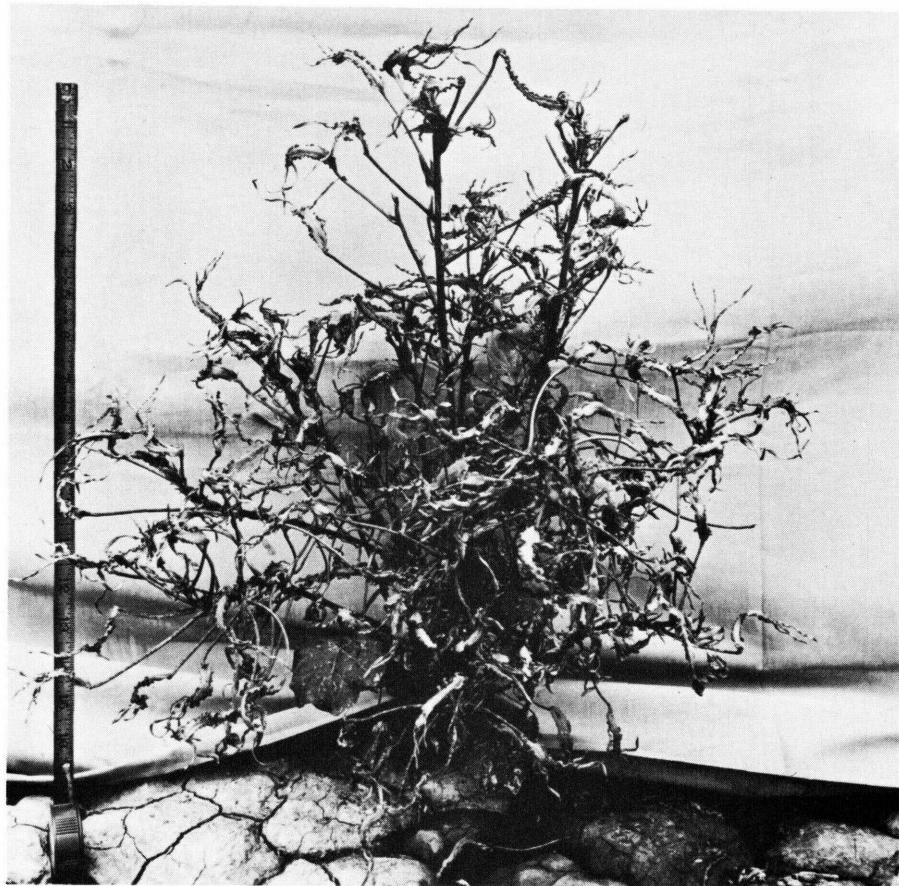
- Do not apply ester formulations when the temperature is above 90°.

- Check output of your sprayer frequently to prevent over-application of herbicides.

- Avoid sprayer skips or overlapping swaths.

- Clean spray equipment immediately after use.

- Before using spray equip-



Cotton is extremely susceptible to phenoxy herbicides. This plant was killed when it was accidentally sprayed with 2,4-D

BN-13680-X

ment for applying insecticides or fungicides to crops, test it for injurious traces of herbicides.

Methods

Cropland

You can apply herbicides on cropland as preemergence sprays (after the crop is planted but before it or the weeds come up) or as postemergence sprays (after the crop and weeds come up).

Most modern spray equipment is designed for low-volume application—from about 5 to about 20 gallons of spray per acre. With the proper attachments, low-volume equipment can be used for broadcast spraying, band treatments, or directed spraying.

Apply a broadcast spray if the crop plants are not sensitive to the herbicide.

For broadcast application, the spray rig is equipped with a multiple-nozzle boom or a single boomless nozzle.

Apply a directed spray if the crop plants are somewhat sensitive to the herbicide.

For directed application, the rig is equipped with a boom and drop nozzles, which are adjusted to spray the weeds but no more than the bases of the crop plants.

Airplanes often are used for spraying crops, especially non-row crops, such as small grains, rice, and grazing lands.

Noncropland

Use a ground sprayer with boom to apply low-volume broad-

cast spray for the control of weeds, brush, and trees on grazing land and on irrigation canal banks.

Airplanes often are used for applying low-volume broadcast sprays to noncropland areas that are too large, too rough, or have too many obstructions for ground equipment.

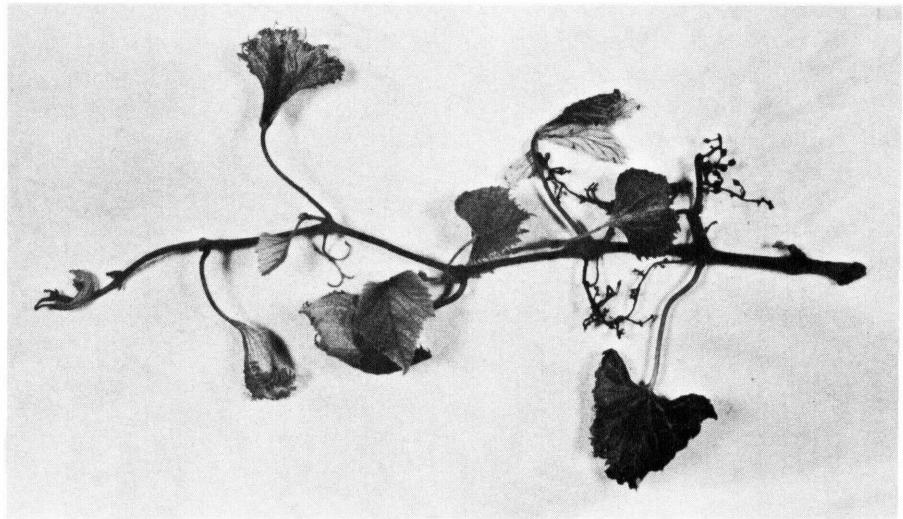
Apply high-volume directed spray to kill brush and trees

Spray Drift

Wind-carried droplets of phenoxy herbicides may kill susceptible crops near the area that is being treated.

To reduce the danger of damaging crops with spray drift—

- Use nozzles that apply a coarse spray.
- Use low pressures—no more than 35 pounds per square inch for boom sprayers, 100 pounds for spray guns.
- Avoid spraying on windy days; do not spray with ground equipment or from airplanes when the wind velocity is sufficient to cause drifts to sensitive crops.
- Spray when wind is blowing away from susceptible crops and toward the area being sprayed.
- Where special drift hazards exist, use one of the special drift-control agents or formulations in properly designed and adjusted equipment. Get professional advice before using these.



BN-13679-X

Spray drift from a nearby application of phenoxy herbicide severely injured this Concord grape vine.

along roads, utility lines, and fencerows, and aquatic weeds and brush along irrigation and drainage canals.

Equipment for high-volume spraying usually has a large-capacity spray tank (over 100 gallons per acre of spray may be used) and operates at relatively high pressure (about 60 to 100 pounds per square inch). The rig usually is equipped with a spray hose and adjustable nozzle. The spray often is applied as a drench that thoroughly wets the leaves and stems of the plants that are to be killed.

Apply sprays of ester formulations in diesel oil or kerosene to the bark at the base of small trees or to cuts in the bark at the base of large trees.

Phenoxy ester formulations with oil as a carrier can be ab-

sorbed by the bark at the base of trees with trunk diameters up to about 4 inches. The spray usually is applied with a small hand-operated sprayer and the lower 6 to 12 inches of bark on the trunk is thoroughly wetted with the solution.

The bark of many trees that are over 4 inches in diameter is too thick for the spray to penetrate. To kill these larger trees, it is necessary to ring the base of the tree with ax cuts and spray the ester or amine solution into the cuts. The ax cuts must go through the bark and into the sapwood.

TESTING OUTPUT OF SPRAYER

Before mixing or applying herbicides on cropland, check the output of your spray equipment. If you apply too little herbicide, it is

ineffective. If you apply too much, it may kill your crops.

In the test, the tractor speed and the pump pressure should be the same as they will be when you apply herbicide. If your tractor is not equipped with a speedometer, it is a good idea to make the test on the same type of terrain that you plan to spray and to mark the throttle setting that you use.

To test the output—

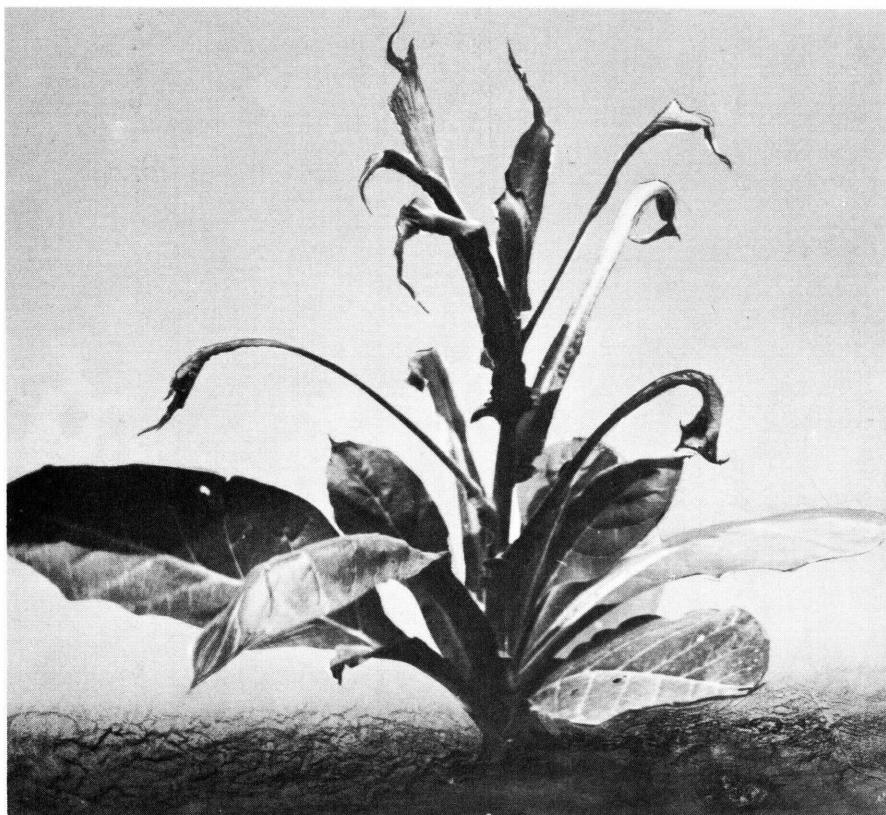
- Fill the spray tank with water.

- Spray a strip exactly 220 yards long.

- At the end of 220 yards, stop spraying and measure, in quarts, the amount of water needed to refill the spray tank.

To determine the spray output in gallons per acre, multiply the number of quarts by 16.5 and divide the answer by the width, in feet, of the spray strip.

Example: Your spray rig treats a strip 20 feet wide. At operating speed and pressure, the rig uses



BN-13681-X
This equipment used to apply insecticide to this tobacco plant had been used previously for applying phenoxy herbicide. The tobacco was injured by herbicide traces that remained in the sprayer.

6 quarts of water in 220 yards:

$$6 \times 16.5 = 99.$$

$$99 \div 20 = 4.95, \text{ or about 5 gallons of spray per acre.}$$

The output of the sprayer is for the area treated. If your sprayer is adjusted to apply spray in bands to row crops, calculate the total width of the spray pattern. To do this, multiply the number of nozzles by the width that each nozzle treats.

If you are using 6 drop nozzles and each treats a 20-inch width, then the total width of the spray pattern is 10 feet, regardless of the nozzle spacing.

Output of the spray equipment may change because of enlarged nozzle orifices or worn parts in the pump. Check the output pe-

riodically to prevent application at the wrong rate.

After you know the output of your sprayer, you can mix the spray accurately. To calculate the total amount of spray needed, multiply the area to be sprayed, in acres, by the output per acre. Add the recommended amount of acid equivalent—in the form of herbicide concentrate—to enough carrier (water or oil) to equal the total amount of spray needed.

For example: The calculated output is 5 gallons per acre and you plan to spray 10 acres at a recommended rate of 1 pound of acid equivalent per acre. Therefore you will need a total of 50 gallons of spray containing 10 pounds of acid equivalent.

The herbicide concentrate con-



The right half of this field was sprayed with 2,4-D before the corn or weeds emerged.
The left half of the field was not treated.

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PRECAUTIONS

Phenoxy herbicides are safe when stored, handled, mixed, and used in accordance with label instructions and sound agricultural practices. Most herbicides are low in toxicity. However, some can cause injury to man, many domestic animals, and fish and wildlife if improperly used.

Most herbicides are toxic to many crop plants and ornamentals. Many are volatile and their vapors and spray drift will cause damage to desirable plants. Avoid spraying when windy conditions exist.

Keep herbicides away from children, livestock, and pets. Store herbicides in closed, well-labeled containers in a dry place where they cannot contaminate food, feed, or water.

When handling herbicides wear clean, dry clothing. Launder clothing after each spraying operation before wearing again.

Do not inhale herbicides and avoid contact with spray mist and drift. Avoid repeated or prolonged contact of herbicide with your skin. Avoid spilling it on any part of your body—especially your eyes, nose, and mouth. If you spill it on your body, wash it off with soap and water and remove contaminated clothing.

To protect fish, wildlife, and livestock, do not clean spraying equipment or dump excess spray material near lakes, streams, or ponds.

Empty herbicide containers may be hazardous. Dispose of them in accordance with label instructions and the recommendations of your State Extension weed science specialist or other local agricultural authorities. Do not burn herbicide containers.

tains 4 pounds of acid equivalent per gallon. Add 2½ gallons of concentrate (10 pounds total acid equivalent) to 47½ gallons of water.

CLEANING SPRAY EQUIPMENT

Clean your spray equipment immediately after using it for applying herbicides.

Some crops can be damaged or

killed by traces of phenoxy herbicides that are left in the sprayer after cleaning. Before applying fungicides or insecticides to crops with equipment that has been used for herbicides, test the equipment for herbicide traces.

Fill the tank with water and spray a few of the crop plants. Sensitive plants such as tomato, cotton, and tobacco are good test plants. Wait a day or two after spraying. If the crop plants show

no distorted growth after this period, the equipment can be used safely for spraying the crop. If the plants are distorted, then clean the spray equipment again. Retest the equipment for cleanliness before using it on crops.

For greatest safety with sensitive crops, apply fungicides or insecticides with equipment that has not been used for applying herbicides.

You can clean spray equipment quickly with a suspension of activated charcoal in water. Use at least one-third of a tank of water. For each 10 gallons of water add $\frac{1}{4}$ pound of activated charcoal and $\frac{1}{8}$ to $\frac{1}{4}$ pound of laundry detergent. Agitate this mixture vigorously to distribute the charcoal through the water.

Wash the equipment for 2 minutes by swirling the liquid around in the tank so that it reaches all parts of the tank. Pump some of the liquid through the hose and nozzles. Then drain the tank and

rinse the equipment with clean water.

SUSCEPTIBILITY CHART

The chart that follows lists the effects of phenoxy herbicides when applied as foliage sprays on a number of common weeds. Rate of application for 2,4-D, 2,4,5-T,² MCPA, or silvex is 1 pound per acre; rate of application for 2,4-DB is 2 pounds per acre.

The control ratings for the herbicides are interpreted as follows:
Excellent.—One application at rate kills the weed.

Good.—Several applications at rate needed to kill the weed.

Fair.—Repeated applications at rate or application at higher rates needed to kill the weed.

Poor.—Weed kill is erratic, even at high rates of application.

None.—No visible effect.

² See limitation on use of 2,4,5-T on inside cover.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB

Plant name	Type of plant	Control 1				
		2,4-D	MCPA	2,4,5-T ²	Silver	2,4-DB
Alder (<i>Alnus</i> spp.)	Woody	Good	Good	Excellent	Excellent	Fair
Alligatorweed (<i>Alternanthera philoxeroides</i>)	Perennial	Poor	None	Fair	Fair	Poor
Alyssum, hoary (<i>Berteroa incana</i>)	Perennial ³	Fair	Fair	Excellent	Excellent	Excellent
Amaranth:						
Green (<i>Amaranthus hybridus</i>)	Annual	Excellent	Excellent	do	do	do
Palmer (<i>A. palmeri</i>)	do	do	do	do	do	do
See also Pigweed.						
Arrowgrass, seaside (<i>Triglochin maritima</i>)	Perennial	Fair	Fair	Fair	Fair	Fair
Arrowhead:						
Annual (<i>Sagittaria calycina</i>)	Annual	Excellent	Excellent	Excellent	Excellent	Do.
Perennial (<i>S. longiloba</i>)	Perennial	Fair	Fair	Poor	Poor	None.
Ash (<i>Fraxinus</i> spp.)	Woody	None	None	do	do	do
Aster:						
Many-flowered (<i>Aster ericoides</i>)	Perennial	Good	Poor	Poor	Poor	Do.
Western (<i>A. occidentalis</i>)	do	Fair	Fair	Fair	Fair	Do.
White heath (<i>A. pilosus</i>)	do	Poor	None	Poor	Poor	Do.
Woodsy (<i>Xylorhiza parryi</i>)	do	Excellent	Good	Good	Good	
Baccharis, coyote brush (<i>Baccharis pilularis</i>)	Woody	Perennial	Annual	Fair	do	
Baileya, desert (<i>Baileya multiradiata</i>)	do	do	do	do	do	
Bassia, five-hook (<i>Bassia hyssopifolia</i>)	do	do	do	do	do	
Cornflower:						
Bachelor's button (<i>Centaurea cyanus</i>)	do	do	do	do	do	
Bedstraw:						
Cleavers (<i>Gallium aparine</i>)	do	Poor	None	Poor	Good	Good
Smooth (<i>G. mollugo</i>)	Perennial	None	do	do	do	do
Beepplant, Rocky Mountain (<i>Cleome serrulata</i>)	Annual	Fair	do	do	do	do
Beggartick, devils (<i>Burdens frondosa</i>)	do	Excellent	Excellent	Excellent	Excellent	
Florida betony (<i>Stachys floridana</i>)	Perennial	Poor	Poor	Poor	Poor	
Bindweed:						
Field (<i>Convolvulus arvensis</i>)	do	Fair	Fair	Fair	Fair	Fair
Hedge (<i>C. sepium</i>)	do	Good	Good	Good	Good	Good
Biscuitroot (<i>Lomatium nudicaule</i>)	do	Fair	Fair	Fair	Fair	Fair

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control 1				
		2,4-D	MCPA	2,4,5-T ²	Silver	2,4-DB
Bistort, American (<i>Polygonum bistortoides</i>)	do	do	None	Fair	Fair	None.
Blackberry (<i>Rubus</i> spp.)	Woody	None	Good	Good	Good	Do.
Blackedey susan (<i>Rudbeckia serotina</i>)	Perennial	Good	do	do	do	Excellent.
Bloodweed (<i>Ambrosia aptera</i>)	Annual	Excellent	Fair	do	do	Excellent.
Blueweed, Texas (<i>Helianthus ciliaris</i>)	Perennial	do	Poor	Poor	Poor	Do.
Boxelder (<i>Acer negundo</i>)	Woody	Good	None	Good	Good	Do.
Bracken (<i>Pteridium aquilinum</i>)	Perennial	None	None	None	None	Do.
Broomweed, common (<i>Galinsoga officinalis</i>)	Annual	Good	do	Good	Good	Do.
Broom, Scotch (<i>Cytisus scoparius</i>)	Woody	do	Fair	do	Good	Do.
Buckeye, California (<i>Aesculus californica</i>)	do	do	do	Poor	Poor	None.
Buckwheat:						
Tartary (<i>Fagopyrum tataricum</i>)	Annual	Poor	Excellent	Fair	Fair	Good.
Wild (<i>F. convolvulus</i>)	do	Fair	do	Good	Good	Good.
Buffalobur (<i>Solanum rostratum</i>)	do	None	None	None	None	None.
Bulrush (<i>Scirpus</i> spp.)	Perennial	Fair	Fair	Fair	Fair	None.
Burdock, common (<i>Arctium minus</i>)	Biennial	Excellent	do	do	do	Excellent.
Bur-head (<i>Echinodorus cordifolius</i>)	Annual	do	do	do	do	do.
Buckbrush (<i>Symporicarpus orbiculatus</i>)	Woody	Good	Fair	None	None	None.
Western (<i>S. occidentalis</i>)	do	Fair	Fair	Fair	Poor	None.
Bullnettle (<i>Cnidoscolus stimulosus</i>)	Perennial	Good	do	Good	Good	Excellent.
Burroweed (<i>Haplospappus tenuiseptus</i>)	do	do	do	do	do	do.
Buttercup:						
Celery leaf (<i>Ranunculus sceleratus</i>)	Annual	Fair	do	do	do	do.
Corn (<i>R. arvensis</i>)	do	Good	do	do	do	do.
Creeping (<i>R. repens</i>)	Perennial	do	do	do	do	do.
Tall (<i>R. acris</i>)	do	do	do	do	do	do.
Campion, bladder (<i>Silene caerulea</i>)	do	None	None	None	None	None.
Carpetweed (<i>Mollugo verticillata</i>)	Annual	Excellent	do	do	do	do.
Carrot, wild (<i>Daucus carota</i>)	Biennial	Fair	Fair	Fair	Fair	Excellent.
Catchfly, night flowering (<i>Silene noctiflora</i>)	Annual	None	None	None	None	Fair.

Catsear, spotted (<i>Hypochaeris radicata</i>)	Perennial	Good	Excellent	Excellent	Fair	Poor.	Excellent.
Catnip (<i>Nepeta cataria</i>)	do	do	do	do	do	do	Do.
Cattail:							
Broadleaf (<i>Typha latifolia</i>)	do	Fair	Poor	Fair	Fair	Poor.	
Narrowleaf (<i>T. angustifolia</i>)	do	do	do	Fair	do	Fair.	
Ceanothus (<i>Ceanothus</i> spp.)	Woody	Good	Good	Good	do	do	
Wedgeleaf (<i>C. cuneatus</i>)	do	do	do	do	do	do	
Chamise (<i>Adenostoma fasciculatum</i>)	do	Fair	Poor	Fair	Poor	Poor.	
Chickweed:							
Common (<i>Stellaria media</i>)	Annual	do	do	do	Good	Excellent	Fair.
Field (<i>Cerastium arvense</i>)	Perennial	do	do	do	do	do	Poor.
Mouseear (<i>C. vulgatum</i>)	do	do	do	do	do	do	Do.
Chicory (<i>Cichorium intybus</i>)	Perennial	Good	Good	Good	Good	Fair	Fair.
Chokeberry (<i>Prunus virginiana</i>)	Woody	Poor	Fair	Fair	Fair	None.	None.
Cinquefoil:							
Blueleaf (<i>Potentilla diversifolia</i>)	Perennial	Fair	Fair	do	Fair	Fair	
Common (<i>P. canadensis</i>)	do	Good	Fair	do	Fair	Fair	
Rough (<i>P. norvegica</i>)	Annual ³	Excellent	Fair	Good	do	do	
Sulfur (<i>P. recta</i>)	Perennial	Good	do	do	do	do	
Cockle:							
Corn (<i>Agrostemma githago</i>)	Annual ³	Poor	Poor	None	None	None	None.
White (<i>Lycopus alba</i>)	Perennial	do	None	do	do	do	Do.
Cocklebur, common (<i>Xanthium pensylvanicum</i>).	Annual	Excellent	Fair	Excellent	do	do	Good.
Coffeeweed (<i>Dauhendonia texana</i>)	Woody	do	Good	do	Fair	Fair	Fair.
Coyotillo (<i>Karwinskia humboldtiana</i>)	Perennial	Good	Good	Excellent	Excellent	Excellent	Excellent.
Cranebill, cutleaf (<i>Geranium dissectum</i>)	Annual ³	Annual ³	Annual ³	Fair	Fair	Fair	
Cress, hoary (<i>Cardaria draba</i>)	Perennial	Fair	Fair	Fair	Fair	Fair	
Crotont:							
Lindheimer (<i>Croton lindheimeri</i>)	Annual	Excellent	Excellent	Good	Good	Good	Good.
Texas (<i>C. texensis</i>)	do	do	do	do	do	do	Excellent.
Wolly (<i>C. capitatus</i>)	do	do	do	Fair	Excellent	Excellent	
Burcucumber (<i>Sicyos angulatus</i>)	do	do	do	None	do	do	
Cudweed (<i>Gnaphalium perenne</i>)	Annual	None	Fair	Fair	Fair	Fair	
Daisy, oxeye (<i>Chrysanthemum leucanthemum</i>)	Perennial	Fair	Fair	Fair	Fair	Fair	
Dandelion (<i>Taraxacum officinale</i>)	do	Annual ³	Excellent	Excellent	Excellent	Excellent	
Deadnettle, red (<i>Lamium purpureum</i>)	Annual ³	Poor	Poor	Poor	Poor	Poor	
Deathcamas (<i>Zigadenus gramineus</i>)	Perennial	do	do	do	do	do	
Foothill (<i>Z. paniculatus</i>)	do	Good	Good	Good	Good	Good	

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control ¹					2,4-DB
		2,4-D	MCPA	2,4,5-T ²	Silver	2,4-DB	
Deerweed (<i>Lobelia scoparia</i>)	Woody Annual	Excellent		Excellent			
Devil's claw (<i>Proboscidea louisianica</i>)	Annual	do		do			
Dock:							
Broadleaf (<i>Rumex obtusifolius</i>)	Perennial	Good	Fair	Good	Good	Fair.	
Curly (<i>R. crispus</i>)	do	do	do	do	Poor	Fair.	
Fiddle (<i>R. pulcher</i>)	do	Excellent	Good	Good	Good	Poor.	
Pale (<i>R. alissimum</i>)	do	Good	Fair	Good	Good	Poor.	
Veiny (<i>R. venosus</i>)	do						
Dodder:							
Largedeed (<i>Cuscuta indecora</i>)	Annual	Poor	None	None	None	None	
Smallseed alfalfa (<i>C. pentagona</i>)	do	do	do	do	do	Do.	
Duckweed, common (<i>Lemna minor</i>)	do	do	do	do	None	Fair	
Elm (<i>Ulmus</i> spp.)	Woody	do	do	do	Fair	Excellent	
Evening primrose, common (<i>Oenothera biennis</i>)	Biennial	Excellent	do	do	Good	Excellent	
Falseflax, smallseeded (<i>Camelina microcarpa</i>)	Annual	do					
Fennel, dog (<i>Eupatorium capillifolium</i>)	do						
Fiddleneck, coast (<i>Amsinckia intermedia</i>)	do						
Filarie, redstem (<i>Erodium cicutarium</i>)	Annual ³	do	Good	Fair	Good	Do.	
Fireweed (<i>Epilobium angustifolium</i>)	Perennial	do	do	do	do	Poor.	
Fleabane:							
Annual (<i>Erigeron annuus</i>)	Annual	Fair	Fair	do	do	Excellent.	
Oregon (<i>E. speciosus</i>)	Perennial	do					
Rough (<i>E. strigosus</i>)	Annual ³	Good					
Flixweed (<i>Descurainia sophia</i>)	do	Excellent	Fair				
Franseria:							
Bur (<i>Franseria discolor</i>)	Perennial	do	Fair	do	Poor	Poor.	
Woollyleaf (<i>F. tomentosa</i>)	do				Excellent	Excellent	
Galinsoga, hairy (<i>Galinsoga ciliata</i>)	Annual				Poor	Poor.	
Garlic, wild (<i>Allium vineale</i>)	Perennial				Poor	Excellent	
Geranium, Carolina (<i>Geranium carolinianum</i>)	Annual ³				Poor	None	
Goatsrue (<i>Gilia officinalis</i>)	Perennial				Good	Good	
Goldenrod (<i>Solidago</i> spp.)	do				Fair	Excellent.	
Gooseberry, sierra (<i>Ribes roezlii</i>)	Woody				do	Good	

Goosefoot:	Jerusalem-oak (<i>Chenopodium botrys</i>)	Annual do	Fair Excellent do	Excellent do	Fair Fair	Do.
	Nettleleaf (<i>C. murale</i>)	do	Poor	Poor	Poor	Do.
	Oakleaf (<i>C. glaucum</i>)	do	Poor	Poor	Poor	None.
	Oakleaf (<i>Spirostachys zeylanica</i>)	Perennial	None	None	None	
	Gourds, buffalo (<i>Cucurbita foetidissima</i>)	do	Poor	Poor	Poor	
	Goutweed, Bishop's (Aegopodium podagraria)	do	Poor	Poor	Poor	
	Grapehyacinth (<i>Muscari botryoides</i>)	do	None	None	Poor	
	Greenbrier (<i>Smilax bona-nox</i>)	Woody do	Poor	Poor	Poor	
	Common (<i>S. rotundifolia</i>)	Perennial	do	do	do	
	Gronwell (<i>Lithospermum officinale</i>)	Perennial	do	do	do	
Groundcherry:	Clammy (<i>Physalis heterophylla</i>)	Woody do	None do	Fair	Fair	None
	Purple flower (<i>P. lobata</i>)	do	None	Poor	Poor	
	Smooth (<i>P. subglabra</i>)	do	do	Excellent	Excellent	
	Wrights (<i>P. wrightii</i>)	Annual Perennial	Annual Perennial	Fair	Fair	Do.
Ground-ivy (<i>Glechoma hederacea</i>)		do	Poor	Poor	Poor	
Groundsel:		do	do	do	do	
	Arrowleaf (<i>Senecio triangularis</i>)	Annual do	Poor	Poor	None	
	Common (<i>S. vulgaris</i>)	Perennial do	Excellent	Excellent	Good	
	Cressleaf (<i>S. glabellus</i>)	do	do	do	do	
	Riddell (<i>S. riddellii</i>)	do	Fair	Fair	Good	
Threadleaf (<i>S. longilobus</i>)		do	do	do	do	
Gum:	Sweet (<i>Liquidambar styraciflua</i>)	Woody do	Poor None	Good Fair	Fair	Fair
	Tupelo or black (<i>Nyssa sylvatica</i>)	Perennial	Excellent	Poor	Poor	do
	Gumweed (<i>Grindelia squarrosa</i>)	Annual	Fair	Poor	Poor	do
	Hedgehog (<i>Haloxylon glomeratus</i>)	Annual	Poor	Poor	None	None
	Hawksbeard, smooth (<i>Crepis capillaris</i>)	do	do	do	do	
	Hawkweed:					
	Orange (<i>Hieracium aurantiacum</i>)	Perennial	Fair	Poor	Poor	
	Yellow (<i>H. pratinense</i>)	do	do	do	do	
	Hawthorn (<i>Crataegus</i> spp.)	Woody Perennial	None Good	Fair Poor	Poor Poor	None. Do.
	Heath (<i>Prunella vulgaris</i>)	do	do	do	do	
	Hellebore, false western (<i>Veratrum californicum</i>)	do	do	do	do	
	Hemlock poison (<i>Conium maculatum</i>)	Biennial	Excellent	Fair	Excellent	
	Hemp (<i>Cannabis sativa</i>)	Annual	do	Good	Good	
	Hempnettle (<i>Galeopsis tetrahit</i>)	do	Poor	Fair	Fair	
	Henbit (<i>Lamium amplexicaule</i>)	do	Poor	Poor	Fair	
	Hickory (<i>Carya</i> spp.)	Woody	do	do	do	None.

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control 1					2,4-DB
		2,4-D	MCPA	2,4,5-T ²	Silver		
Hogpeanut (<i>Amphicarpa bracteata</i>)	Perennial	Excellent	None	None	None	Do.	
Hogpotato (<i>Hoffmannseggia densiflora</i>)	do	Poor	Fair	Fair	Good	Good	
Honey locust (<i>Gleditsia triacanthos</i>)	Woody	do	Poor	Poor	Poor	Poor	
Honeysuckle (<i>Lonicera japonica</i>)	do	do	do	do	Poor	Poor	
Horsebrush, littleleaf (<i>Tetradymia glabrata</i>)	Perennial	do	do	Fair	Fair	Poor	
Horsenettles, Carolina (<i>Solanum carolinense</i>)	Annual	do	do	do	Poor	Good	
Horsetail, field (<i>Equisetum arvense</i>)	Annual	do	Fair	do	Good	Good	
Horseweed, maretail (<i>Eriogon canadensis</i>)	Biennial	do	do	do	None	None	
Houndstongue (<i>Cynoglossum officinale</i>)	Biennial	Poor	Poor	Poor	Poor	Poor	
Indian-hemp (<i>Apoynium cannabinum</i>)	Annual	do	Fair	do	Good	Good	
Indian-tobacco (<i>Lobelia inflata</i>)	Annual	do	do	do	None	None	
Iris, Rocky Mountain (<i>Iris missouriensis</i>)	Perennial	do	Good	Good	None	None	
Ironweed, Western (<i>Vernonia baldwinii</i>)	do	do	do	do	Excellent	Excellent	
Ivy, English (<i>Hedera helix</i>)	do	do	do	do	do	do	
Jerusalem-artichoke (<i>Helianthus tuberosus</i>)	Annual	do	do	do	do	do	
Jewelweed (<i>Impatiens pallida</i>)	Perennial	do	do	do	do	do	
Jimmyweed (<i>Haplopappus purpuriflorus</i>)	Annual	do	do	do	do	do	
Jimsonweed (<i>Datura stramonium</i>)	do	do	do	do	do	do	
Joint-rye, Northern (<i>Asclepias moneuri-</i> <i>ginica</i>)	do	do	do	do	do	do	
Juniper:							
Alligator (<i>Juniperus deppeana</i>)	Woody	None	do	do	None	None	
One-seed (<i>J. monosperma</i>)	do	do	Poor	Poor	do	do	
Utah (<i>J. osteosperma</i>)	do	do	do	do	do	do	
Knapweed:							
Brown (<i>Centaurea jacea</i>)	Perennial	Fair	Excellent	None	Poor	Poor	
Diffuse (<i>C. diffusa</i>)	Biennial	Poor	Poor	Poor	do	do	
Russian (<i>C. repens</i>)	Perennial	Fair	Excellent	do	Fair	Good	
Spotted (<i>C. maculosa</i>)	Biennial	do	do	do	do	do	
Squarrose (<i>C. virgata var. squarrosa</i>)	Annual	None	None	None	None	None	
Knaule (<i>Scleranthus annuus</i>)	do	do	do	do	do	do	
Kochia (<i>Kochia scoparia</i>)	do	do	do	do	do	do	

Knotweed:	
Japanese (<i>Polygonum Cuspidatum</i>)	Perennial Annual
Prostrate (<i>P. aviculare</i>)	Fair Good
Sakhalin (<i>P. sachalinense</i>)	Fair
Silversneath (<i>P. argyrocoleon</i>)	do Excellent
Kudzu (<i>Pueraria lobata</i>)	Perennial Annual
Lambquarters, common (<i>Chenopodium album</i>)	Perennial do
Larkspur:	
Little (<i>Delphinium bicolor</i>)	None Fair
Menzies (<i>D. menziesii</i>)	None do
Tall (<i>D. barbeyi</i>)	None do
Duncecap (<i>D. occidentale</i>)	None do
Lettuce:	
Blue (<i>Lactuca pulchella</i>)	do
Wild (<i>L. sativa</i>)	Annual
Loco bigbend (<i>Astragalus earlei</i>)	Annual 3- Perennial
Locoweed, white (<i>Oxytropis lambertii</i>)	Perennial Woody
Locust, black (<i>Robinia pseudo-acacia</i>)	Annual
London-rocket, annual (<i>Sisymbrium irio</i>)	Perennial
London-rocket, perennial (<i>Franseria conferti-flora</i>)	Perennial Woody
Lupine (<i>Lupinus rivularis</i>)	Annual 3- Perennial
Silvery (<i>L. argenteus</i>)	do
Tailcup (<i>L. caudatus</i>)	Woody
Madrone (<i>Arbutus menziesii</i>)	do
Mallow:	
Common (<i>Malva neglecta</i>)	Annual 3- Perennial
Dwarf (<i>M. rotundiflora</i>)	Annual
Little (<i>M. parviflora</i>)	do
Venice (<i>Hibiscus trionum</i>)	do
Manzanita (<i>Arctostaphylos</i> spp.)	Woody
Maples (<i>Acer</i> spp.)	do
Marsheider (<i>Iva xanthifolia</i>)	Poor Annual
Mayweed, dogfennel (<i>Anthemis cotula</i>)	Excellent do
Medic, Black (<i>Medicago lupulina</i>)	Fair do
Mesquite:	
Honey (<i>Prosopis juliflora</i> var. <i>glandulosa</i>)	Poor do
Velvet (<i>P. juliflora</i> var. <i>velutina</i>)	None Annual
Mexicanatea (<i>Chenopodium ambrosioides</i>)	Excellent do
Mexican weed (<i>Caperonia castaneaeifolia</i>)	Fair Good

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control 1				
		2,4-D	MCPA	2,4,5-T ²	Silver	2,4-DB
Milkweed (<i>Asclepias curassavica</i>)	Perennial	Good	Excellent	Fair	Fair	Do.
Broadleaf (<i>A. latifolia</i>)	do	Fair	Poor	do	do	Do.
Common (<i>A. syriaca</i>)	do	None	do	Good	Do.	Do.
Showy (<i>A. speciosa</i>)	do	do	do	do	Do.	Do.
Eastern whorled (<i>A. verticillata</i>)	Woody	do	do	do	do	Poor.
Mimosa, catchaw (<i>Mimosa biuncifera</i>)	Perennial	Excellent				
Moneywort (<i>Lysimachia nummularia</i>)						
Morningglory:						
Common (<i>Ipomoea purpurea</i>)	Annual	do	Excellent	Excellent	Excellent	Excellent.
Ivyleaf (<i>I. hederacea</i>)	do	do	do	do	do	Do.
Woolly (<i>I. hirsutula</i>)	do	do	Poor	Poor	Poor.	
Mountain Mahogany (<i>Cercocarpus montanus</i>)	Woody	Good	Good	Good	Good	Fair.
Mudplantain (<i>Heieranthera limosa</i>)	Annual	Excellent	None	None	None	
Mugwort (<i>Artemisia vulgaris</i>)	Perennial	Poor	None	Poor	Poor	
Mulberry (<i>Morus</i> spp.)	Wood	None	Poor	Fair	Fair	
Mulesear (<i>Wyethia amplexicaulis</i>)	Perennial	Good	Good	Good	Good	
Mullein:						
Common (<i>Verbascum thapsus</i>)	Biennial	Poor	Poor	Fair	Fair	
Moth (<i>V. blattaria</i>)	Perennial	Fair	do	do	do	
Mustard:						
Black (<i>Brassica nigra</i>)	Annual	Excellent	Excellent	Good	Good	Excellent.
Blue (<i>Chorispora tenella</i>)	do	Fair	Poor	do	do	None.
Haresear (<i>Conringia orientalis</i>)	do	Excellent	Good	do	do	
Hedge (<i>Sisymbrium officinale</i>)	do	do	Excellent	Excellent	Excellent	Excellent.
Indian (<i>Brassica juncea</i>)	do	do	do	do	do	Do.
Tumble (<i>Sisymbrium alissimum</i>)	do	do	do	do	do	Do.
Wild (<i>Brassica oleracea</i>)	do	do	do	do	do	Do.
Wormseed (<i>Erysimum cheiranthoides</i>)	Annual ³	do	do	do	do	Do.
Nettle:						
Stinging (<i>Urtica dioica</i>)	Perennial	Good	do	do	do	
Tall (<i>U. procera</i>)	Annual	do	do	do	do	
Niggerhead (<i>Rudbeckia occidentalis</i>)	Perennial	do	do	do	do	

Nightshade:	Black (<i>Solanum nigrum</i>)	Annual	Fair	Fair	Fair	Good	Fair.
	Cutleaf (<i>S. triflorum</i>)	do	do	do	Poor	Poor	Poor.
	Silverleaf (<i>S. elaeagnifolium</i>)	Perennial	do	do	do	Excellent	Excellent.
Norcal bean (<i>Sophora secundiflora</i>)		do	do	do	do	do	do
Nutsedge:		do	do	do	do	do	do
Purple (<i>Cyperus rotundus</i>)		do	do	do	do	do	do
Yellow (<i>C. esculentus</i>)		do	do	do	do	do	do
Oak:							
Black (<i>Quercus velutina</i>)	Woody	do	do	do	do	do	do
Blackjack (<i>Q. marilandica</i>)	do	do	do	do	do	do	do
Blue (<i>Q. douglasii</i>)	do	do	do	do	Poor	Poor	Poor.
Gambel (<i>Q. gambelii</i>)	do	do	do	do	Poor	Fair	Poor.
Interior live (<i>Q. wislizenii</i>)	do	do	do	do	Poor	Poor	Poor.
Post (<i>Q. stellata</i>)	do	do	do	do	Poor	Poor	Poor.
Scrub (<i>Q. dumosa</i>)	do	do	do	do	Poor	Fair	Fair.
Shinnery (<i>Q. havardii</i>)	do	do	do	do	Poor	Fair	Fair.
Turbinella (<i>Q. turbinella</i>)	Woody	do	do	do	do	do	do
White (<i>Q. alba</i>)	Perennial	do	do	do	Poor	Good	Poor.
Onion, wild (<i>Allium canadense</i>)	Annual	do	do	do	Poor	Poor	Poor.
Orache (<i>Atriplex hastata</i>)	Woody	do	do	do	do	do	do
Osage-orange (<i>Machatura pomifera</i>)	Perennial	do	do	do	do	do	do
Parsley, desert (<i>Lomatium grayi</i>)	Biennial	do	do	do	do	do	do
Partridgepea (<i>Cassia fasciculata</i>)	Annual	do	do	do	do	do	do
Passionflower, Maypop (<i>Passiflora incarnata</i>)	Perennial	do	do	do	do	do	do
Peavine (<i>Astragalus emoryanus</i>)	Annual	do	do	do	do	do	do
Pellitoryweed (<i>Parietaria floridana</i>)	do	do	do	do	do	do	do
Pennycress, field (<i>Thlaspi arvense</i>)	do	do	do	do	do	do	do
Pennywort, lawn (<i>Hydrocotyle sibthorpioides</i>)	do	do	do	do	do	do	do
Penstemon, Rydberg (<i>Penstemon rydbergii</i>)	do	do	do	do	Poor	Poor	Poor.
Pepperweed:							
Field (<i>Lepidium campestre</i>)	Annual	do	do	do	do	do	do
Perennial (<i>L. latifolium</i>)	Perennial	do	do	do	do	do	do
Virginia (<i>L. virginicum</i>)	Annual	do	do	do	do	do	do
Yellowflower (<i>L. perfoliatum</i>)	do	do	do	do	do	do	do
Persimmon, Texas (<i>Diospyros virginiana</i>)	Woody	do	do	do	Poor	Poor	Poor.
Texas (<i>D. texana</i>)	do	do	do	do	do	do	do

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control 1					2,4-DB
		2,4-D	MCPA	2,4,5-T ²	Silver		
Pigweed:							
Prostrate (<i>Amaranthus graecizans</i>)	Annual	do	Excellent	Excellent	Excellent	Excellent	Do.
Rough (<i>A. retroflexus</i>)	do	do	do	do	do	do	Do.
Tumble (<i>A. albus</i>)	do	do	Poor	None	Poor	Poor	Do.
Pineappleweed (<i>Mairicaria matricarioides</i>)	do	Fair					None.
Plantain:							
Blackseed (<i>Plantago rugelii</i>)	Perennial	Excellent	Excellent	Excellent	Good	Excellent	Excellent.
Broadleaf (<i>P. major</i>)	do	do	do	do	do	do	Do.
Buckhorn (<i>P. lanceolata</i>)	Woody	Fair	Good	Good	Good	do	Do.
Poison-ivy (<i>Rhus radicans</i>)	do	do	Poor	Poor	Poor	do	None.
Poison-oak (<i>Rhus diversiloba</i>)	do	do	Fair	Fair	Fair	do	Do.
Pokeweed (<i>Phytolacca americana</i>)	Perennial	do	do	do	Good	Good	Poor.
Pondweed (<i>Potamogeton</i> spp.)	do	do	do	do	Poor	Poor	Poor.
Ponyfoot (<i>Dichondra repens</i>)	Annual	Excellent	Good	Fair	Good	Fair	Fair.
Poorjoe (<i>Diodia teres</i>)	do	do	Excellent	Fair	Fair	Fair	Fair.
Poppy, Roemer (<i>Roemeria refracta</i>)	do	Poor					
Prickly-ash, Northern (<i>Xanthoxylum americanum</i>)	Woody						
Pricklypear (<i>Opuntia</i> spp.)	Perennial	Annual	Excellent	Fair	Excellent	Good	Good.
Prickly poppy (<i>Argemone intermedia</i>)	do	do	Fair	do	Fair	Fair	Fair.
Purslane, common (<i>Portulaca oleracea</i>)	do	do	Good	do	do	do	Do.
Puncturevine (<i>Trifoliate terrestris</i>)	do	do	Excellent	do	do	do	None.
Pusley, Florida (<i>Richardia scabra</i>)	do	do	None.				
Queen's-delight (<i>Silene vulgaris</i>)	Perennial						
Rabbitbrush:							
Gray (<i>Chrysothamnus nauseosus</i>)	Woody	Fair	Poor	Poor	Poor	Poor	Excellent.
Yellow (<i>C. viscidiflorus</i>)	do	do	do	do	do	do	Do.
Radish, wild (<i>Raphanus raphanistrum</i>)	Annual	Excellent	Excellent	do	do	do	Do.
Ragweed:							
Common (<i>Ambrosia artemisiifolia</i>)	do	do	do	do	do	do	Do.
Giant (<i>A. trifida</i>)	do	do	do	do	do	do	Do.
Western (<i>A. psilostachya</i>)	Perennial	Good					Do.

Ragwort, tansy (<i>Senecio jacobaea</i>)	Perennial ³	do	Fair	Fair	Poor.
Rape, Bird (<i>Brassica rapa</i>)	Biennial	Excellent	Excellent	Excellent	Excellent.
Raspberry (<i>Rubus</i> spp.)	Woody	Poor	None	Good	None.
Redbay (<i>Persea borbonia</i>)	do	do	do	Poor	Poor
Redbud (<i>Cercis occidentalis</i>)	do	do	do	do	Do.
Redvine (<i>Brunnichia cirrhosa</i>)	Perennial	None	None	Poor	Good.
Redstem (<i>Ammannia coccinea</i>)	Annual	Excellent	Excellent	Excellent	Excellent.
Rose:					
California (<i>Rosa californica</i>)	Woody	None	None	Fair	Fair.
Cherokee (<i>R. laevigata</i>)	do	Fair	None	do	Excellent.
Macartney (<i>R. bracteata</i>)	do	do	do	Good	Good.
Multiflora (<i>R. multiflora</i>)	do	Poor	do	Fair	Fair.
Prairie (<i>R. pratincola</i>)	do	Fair	do	Excellent	Excellent.
Woods (<i>R. woodsi</i>)	do	None	do	Fair	None.
Rubberweed:					
Bitter (<i>Hymenoxys odorata</i>)	Annual	Excellent	do	Fair	Fair.
Colorado (<i>H. richardsonii</i>)	Perennial	Good	do	do	do.
Rue, African (<i>Peganum harmala</i>)	do	do	do	Fair	Fair.
Sage:					
Creeping (<i>Salvia sonomensis</i>)	do	Good	Fair	do	do.
Purple (<i>S. leucophylla</i>)	do	do	do	do	do.
White (<i>S. apiana</i>)	Perennial	Good	Poor	Good	None.
Sagebrush:					
Big (<i>Artemesia tridentata</i>)	Woody	do	Poor	Good	Good.
California (<i>A. californica</i>)	do	Excellent	do	do	do.
Sand (<i>A. filifolia</i>)	do	do	do	do	Poor.
Salsify:					
Common (<i>Tragopogon porrifolius</i>)	Biennial	Good	do	Fair	None.
Meadow (<i>T. pratensis</i>)	do	Poor	None	Poor	Fair.
Saltcedar (<i>Tamarix gallica</i>)	Woody	Fair	Fair	Good	Excellent.
Sedge, Umbrella (<i>Cyperus difformis</i>)	Annual	do	do	do	Fair.
Sesbania, coffeebean (<i>Sesbania exaltata</i>)	do	do	do	do	Do.
Sorrel (<i>Rumex acetosa</i>)	Perennial	Excellent	None	None	Poor.
Heartwing (<i>R. hastatus</i>)	do	do	do	do	Good.
Red (<i>R. acetosella</i>)	do	do	do	do	Good.
Shepherdspurse (<i>Capsella bursa-pastoris</i>)	Annual	Good	Good	Excellent	None.
Sicklepod, coffeeweed (<i>Cassia tora</i>)	do	do	do	do	Good.
Skunkcabbage (<i>Symplocarpus foetidus</i>)	Perennial	Good	do	Fair	Fair.
Smartweed:					
Ladysthumb (<i>Polygonum persicaria</i>)	Annual	do	Fair	do	Good.

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB—Continued

Plant name	Type of plant	Control 1				
		2,4-D	MCPA	2,4,5-T ²	Silver	2,4-DB
Pennsylvania (<i>P. pensylvanicum</i>)	do	do	do	do	Fair	Do.
Swamp (<i>P. coccineum</i>)	Perennial	Poor	Fair	Fair	Poor	Do.
Snakeroot, white (<i>Enpatodium rugosum</i>)	do	do	Fair	do	do	Poor.
Snakeweed:						
Broom (<i>Gutierrezia sarothrae</i>)	do	Good	do	Good	Good	Poor.
Threadleaf (<i>G. microcephala</i>)	do	Excellent	Excellent	Excellent	Good	Good.
Sneezeweed, bitter (<i>Heliumum tenuefolium</i>)	Annual	Fair	do	Good	Good	Fair.
Snow-on-the-mountain (<i>Euphorbia marginata</i>)	do	do	do	Good	Excellent	Excellent.
Sowthistle:						
Annual (<i>Sonchus oleraceus</i>)	do	do	do	do	Fair	Fair.
Perennial (<i>S. arvensis</i>)	Perennial	Excellent	Excellent	Excellent	Fair	Excellent.
Spiny (<i>S. asper</i>)	Annual	Fair	do	do	do	Excellent.
Spannedneedles (<i>Bidens bipinnata</i>)	do	do	do	do	do	Excellent.
Speedwell:						
Common (<i>Veronica officinalis</i>)	Perennial	Poor	None	None	Poor	None.
Corn (<i>V. arvensis</i>)	Annual	do	do	do	do	Do.
Purslane (<i>V. peregrina</i>)	do	Fair	do	Fair	Poor	Poor.
Spikerush (<i>Eleocharis palustris</i>)	Perennial	do	Fair	Poor	Poor	Poor.
Spurge:						
Flowering (<i>Euphorbia corollata</i>)	do	Poor	None	Good	Fair	None.
Leafy (<i>E. esula</i>)	do	do	do	Poor	Fair	Do.
Spotted (<i>E. maculata</i>)	Annual	do	do	do	Fair	Poor.
Spurry, corn (<i>Spergula arvensis</i>)	do	do	Fair	None	Fair	None.
Squaw-berry (<i>Rhus trilobata</i>)	Woody	do	do	Poor	Poor	Poor.
Starthistle, yellow (<i>Centaurea solstitialis</i>)	Annual	do	Fair	Good	None	None.
Sticktight, European (<i>Lappula echinata</i>)	Perennial	do	Poor	Poor	do	Do.
Strawberry, wild (<i>Fragaria spp.</i>)	do	do	Fair	Poor	Fair	Do.
St. Johnswort (<i>Hypericum perforatum</i>)	do	do	do	do	Fair	Do.
Spotted (<i>H. punctatum</i>)	Annual	do	do	do	Fair	Do.
Sumpweed, rough (<i>Iva ciliata</i>)						

Sunflower (<i>Helianthus annus</i>)	do	do	Good	Excellent	Excellent	Excellent	Excellent
Sweetclover, annual yellow (<i>Melilotus indica</i>)	do	Poor	Poor	Poor	Poor	Do.	Poor.
Tanak (Lithocarpus densiflora)	Woody	Fair	None	Fair	Poor	Poor.	Poor.
Tansy (<i>Tanacetum vulgare</i>)	Perennial	do	None	do	Fair	Fair	Fair.
Tansy-mustard (<i>Descurainia pinnata</i>)	Annual	Excellent	do	do	Fair	do	do
Thistle:							
Blessed (Cnicus benedictus)	do	Fair	Fair	Fair	Fair	Fair	Fair.
Blue (<i>Echium vulgare</i>)	Biennial	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent.
Bull (<i>Cirsium vulgare</i>)	do	Fair	Fair	Fair	Fair	Fair	Fair.
Bristly (<i>C. horridulum</i>)	Perennial ³	Fair	do	do	Good	Good	Good.
Canada (<i>C. arvense</i>)	Perennial	do	do	do	do	do	do
Russian (<i>Salsola kali</i>)	Annual	Good	Good	Good	Good	Good	Good.
Tickseed (<i>Coreopsis tinctoria</i>)	do	do	do	do	do	do	do
Toadflax:							
Blue (<i>Linaria canadensis</i>)	Perennial	Poor	None	None	None	None	None.
Yellow (<i>L. vulgaris</i>)	do	do	Good	Fair	Fair	Fair	Fair.
Toyon (<i>Heteromeles arbutifolia</i>)	Woody	do	do	None	do	do	Poor.
Tree-of-heaven (<i>Ailanthus altissima</i>)	do	Fair	Poor	do	Fair	Good	None.
Trumpet creeper (<i>Campsis radicans</i>)	do	do	do	do	Fair	Excellent	Excellent.
Velvet-leaf (<i>Abutilon theophrasti</i>)	Annual	do	do	do	do	do	do
Vervain:							
Blue (<i>Verbena hastata</i>)	Perennial	do	Good	Excellent	do	do	do
Hoary (<i>V. stricta</i>)	do	do	do	do	do	do	do
Prostrate (<i>V. bracteata</i>)	do	do	do	do	do	do	do
Roadside (<i>V. bonariensis</i>)	do	do	do	do	do	do	do
Vetch:							
Narrowleaf (<i>Vicia angustifolia</i>)	Annual	Excellent	Good	Excellent	Fair	Excellent	Excellent
Milk (<i>Astragalus spp.</i>)	Perennial	Good	do	do	do	do	do
Two grooved (<i>A. bisulcatus</i>)	do	Excellent	do	do	do	do	do
Wild (<i>Vicia</i> spp.)	Annual	do	Poor	None	do	do	do
Violet (<i>Viola</i> spp.)	Perennial	do	do	do	do	do	do
Walnut, black (<i>Juglans nigra</i>)	Woody	Excellent	Good	Excellent	do	do	do
Waterhemlock, spotted (<i>Cicuta maculata</i>)	Perennial	do	do	do	do	do	do
Water-lilyacint (<i>Eichhornia crassipes</i>)	do	do	do	do	do	do	do
Waterplantain (<i>Alisma triviale</i>)	do	do	do	do	do	do	do
Waterweed, Canada (<i>Eloeca canadensis</i>)	do	do	do	do	do	do	do
Willow (<i>Salix</i> spp.)	Woody	do	do	do	do	do	do
Witchweed (<i>Striga asiatica</i>)	Annual	Excellent	Good	Good	Good	Good	Good.
Wood sorrel, yellow (<i>Oxalis stricta</i>)	Perennial	Poor	None	Excellent	Excellent	Excellent	Excellent.

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silver, and 2,4-DB

Plant name	Type of plant	Control ¹			
		2,4-D	MCPA	2,4,5-T ²	Silver
Wormwood, annual (<i>Artemisia annua</i>)	Annual	Good	Fair	Good	
Yankee-weed (<i>Eupatorium compositifolium</i>)	Perennial	Fair		Fair	
Yarrow:					
Common (<i>Achillea millefolium</i>)	do	Poor		Poor	
Western (<i>A. lanulosa</i>)	do	Fair		Fair	
Yellow-rocket (<i>Babarea vulgaris</i>)	Perennial ³	Good		Good	
Yerba-santa (<i>Eriodictyon californicum</i>)	Woody	Excellent	do	Fair	
Yucca; soapweed (<i>Yucca glauca</i>)	Perennial	None		Poor	do

¹ For explanation of control ratings, see "Susceptibility Chart," page 10.

² See limitation on use of 2,4,5-T on inside cover.

³ Sometimes biennial.

COMMON AND CHEMICAL NAMES OF PHENOXY HERBICIDES

<i>Common name</i>	<i>Chemical name</i>
2,4-D -----	(2,4-dichlorophenoxy) acetic acid
2,4,5-T -----	(2,4,5-trichlorophenoxy) acetic acid
Silvex -----	2-(2,4,5-trichlorophenoxy) propionic acid
MCPA -----	[(4-chloro- <i>o</i> -tolyl)oxy] acetic acid
2,4-DB -----	4-(2,4-dichlorophenoxy) butyric acid

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